**University of West Alabama**

**COE**

**5E Lesson Plan**

|  |
| --- |
| Teacher: Ms Hudnall  Date: 3/2/17  Subject area/course/grade level: Earth & Space Science, 11th Grade  Materials: Notebook, pencil, Chromebook, Internet access  Standards: Engage in argument from evidence to compare various theories for the formation and changing nature of the universe and our solar system(Big Bang Theory, Hubble’s Law, Steady State Theory, Nebular Theory, light spectra)  Objectives: Students will be able to: Differentiate between a theory and a scientific theory  Analyze evidence that supports three theories of universe formation  Explain universe formation from three different theories    Differentiation Strategies: Learning Centers, Picture Cards, Graphic Organizers, Online Reviews and Simulations |

|  |
| --- |
| **ENGAGEMENT:**  Students will respond to the question, “What is a scientific theory?” Students will be asked to write down their definition and any examples of scientific theories they can think of. Students will be given a set of cards that have theories on them and will have to pick out the ones they think are scientific theories. Then they will write down a definition of a regular theory. Students participate in a short discussion sharing their answers and justifications. Teacher will circulate to view their card sort while students watch a short video about theory and scientific theory and use that information to confirm if they those the correct answers with the card sort. Students will be told that they will investigate scientific theories about how the universe was formed and the evidence that supports it.  Assessment-Card sort |
| **EXPLORATION:**  Students will use their Chromebooks to access several articles about the Big Bang Theory, Steady State Theory and the Nebular Theory. Students will read the articles and focus on who discovered the theory, when and what evidence supports it. Students will have the option of choosing the graphic organizer they want to use to compile the information. Options given will be the basic outline, concept map, Venn diagram or a table. Once information is gathered, students will be asked to explain how the evidence found supports each theory.  Assessment-Graphic organizer check of focus information |
| **EXPLANATION:** Students will view a teacher prepared PowerPoint with images or concepts relating to each of the theories. Students will be asked to share their research and key words that they have discovered that goes along with each image. The teacher will jot the information down on the board and ask the class to confirm if it is correct, if not, someone else may share. The teacher will give the closing summary for each concept to ensure the students’ misunderstandings are cleared up.  Assessment-PowerPoint Image Matching |
| **ELABORATION:**  Students will have to create a comparison PowerPoint of the theories. Students will be given a rubric and asked to use it to verify the assignment is complete and accurate. Students will have to include as their last slide, what they have learned about scientific theories through the theories of universe formation.  Assessment-Rubric for Powerpoint |
| **EVALUATION:**  Student’s overall evaluation will be based on their comparison PowerPoint. The rubric will assess understanding along with each stage of the learning process and formative assessments throughout the lesson. Students will also be given a summative assessment on this topic and other topics in the unit.  Formative Assessment-Padlet  Summative Assessment-Quiz on Edmodo |

References:

Bybee, R.W. et al. (1989). *Science and technology education for the elementary years: Frameworks for curriculum and instruction.* Washington, D.C.: The National Center for Improving Instruction.

Bybee, R. W. (1997). *Achieving Scientific Literacy: From Purposes to Practices.* Oxford: Heinemann.

National Research Council. (1999). *Inquiry and the national science education standards: A guide for teaching and learning.* Washington, D.C.: National Academy Press.

Polman, J.L. (2000). *Designing project-based silence: Connecting learners through guided inquiry.* New York: Teachers College Press.